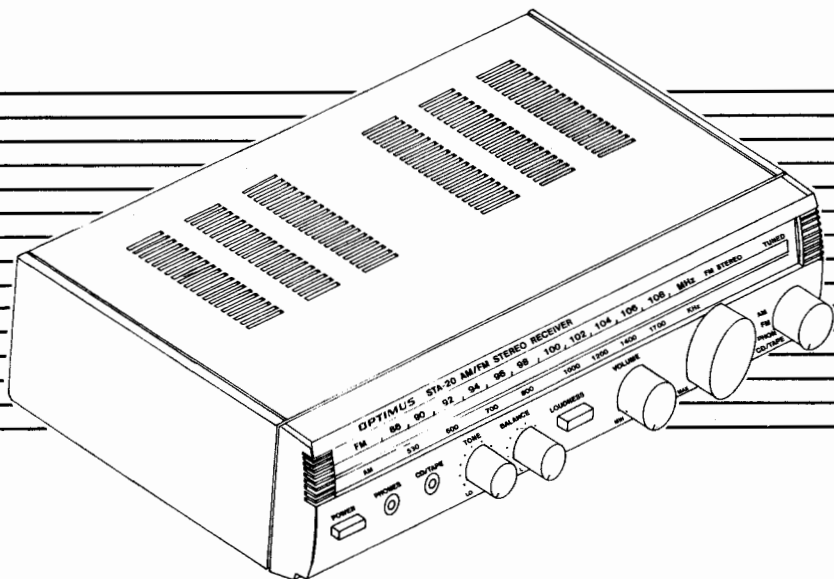


OWNER'S MANUAL

7/26/95

STA-20 AM/FM STEREO RECEIVER

Please read before using this equipment



Cat. No. 31-1979

OPTIMUS®

INTRODUCTION

Your new Optimus STA-20 AM/FM Stereo Receiver gives you excellent audio in a small package. It is designed so that you can use it with smaller speaker systems such as our Minimus 7. The STA-20's 5-watt amplifier section and built-in circuit equalization give you outstanding sound quality for such a compact system. Your receiver also has a special EQ switch to help you get the best possible sound, especially when you use smaller speakers.

FEATURES

- 5 Watts of Power — drives almost any high-efficiency speaker system.
- Front Panel CD/TAPE Input Jack — lets you quickly hook up a portable CD player or cassette deck.
- TUNED Indicator — shows you when you are receiving the strongest signal from an FM or AM radio station.
- TAPE OUT Jacks — enable you to record any one of the amplifier's program sources.
- EQ Switch — provides you with uniform output at low frequencies for a rich, full sound.

For your personal records, we urge you to record the serial number of your receiver in the space provided. You can find the serial number on the receiver's back panel.

Serial Number: _____

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

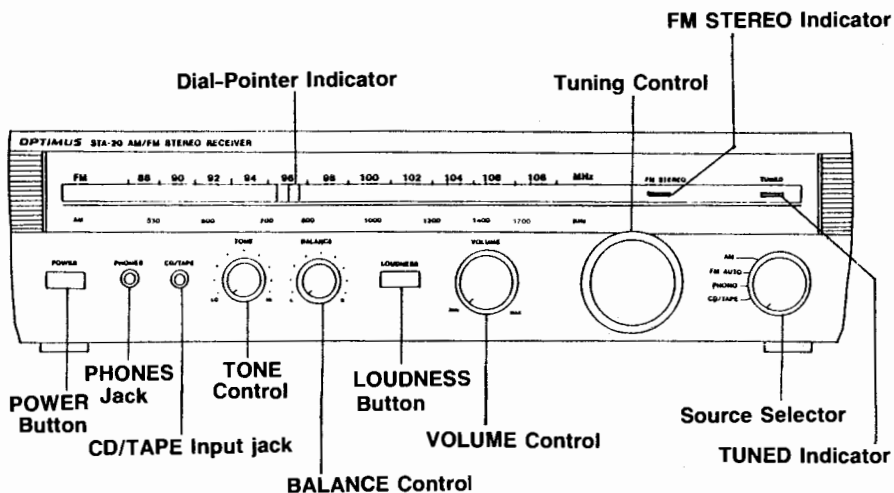
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

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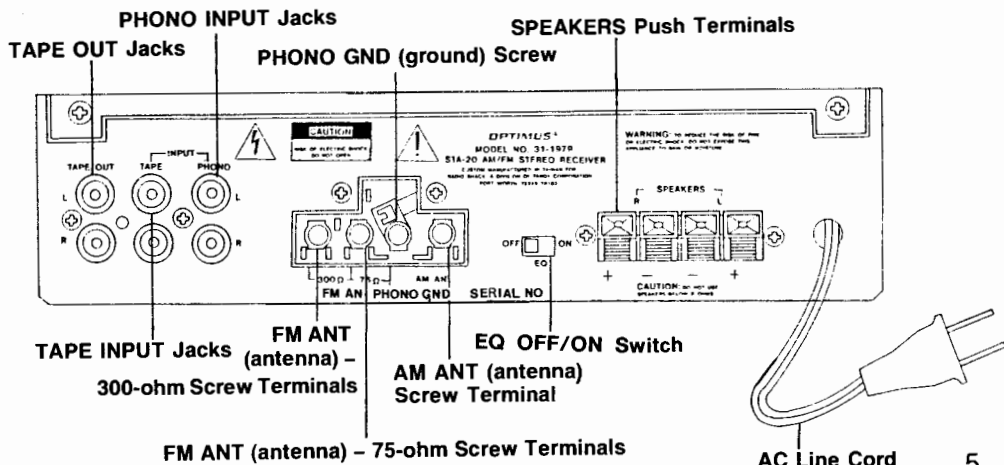
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CONTROL LOCATIONS

Front Panel:



Back Panel:



PREPARATION FOR USE

Before making any connections:

- Be sure the receiver's power cord is unplugged.
- Be sure the [POWER] button is off.

Note: To eliminate or reduce interference, use shielded audio cables for all connections other than speaker connections.

CONNECTING SPEAKERS

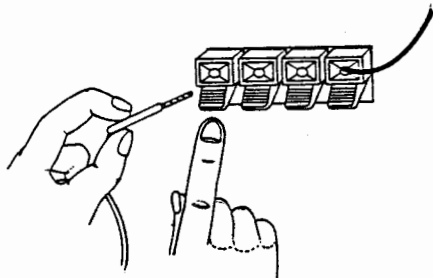
Your receiver is designed for use with speakers that have an impedance of 8 ohms or higher. To fully enjoy the receiver's capabilities, we recommend that you use our Minimus series speaker systems. However, you can also use any high-efficiency standard speakers or other types of compact speakers.

For speaker connections, use speaker cable or 18-16 gauge speaker cable or two-conductor wire. We recommend that you use the shortest length of wire possible.

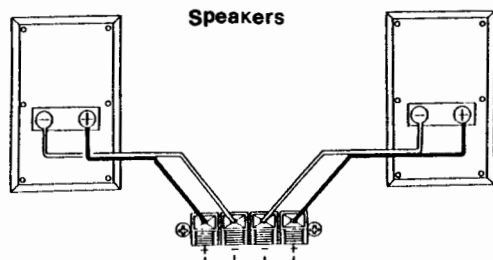
Speaker wire consists of two individual wires encased in insulation. Speaker wire is usually color-coded or marked with a ridge along one side to help you make the proper connections between your receiver and speakers.

1. Cut your speaker wires to the length needed to connect your speakers to your receiver.

2. Split both speaker wires approximately four inches on each end.
3. Using a wire stripper, carefully strip about 1/4 inch of insulation from the end of each individual wire.



4. Connect one of the individual wires to the right positive (+) SPEAKERS push terminal located on the receiver's back panel. Then, connect the other individual wire to the right negative (-) SPEAKERS push terminal.
5. Using the speaker wire's coding as a guide, connect the positive wire to the positive (+) terminal on your right speaker. Then connect the negative wire to your right speaker's negative (-) terminal.



6. Repeat Steps 4-5 to connect the left speaker to the receiver's left SPEAKERS push terminals.

Caution:

- Do not use speakers that have an impedance of less than 8 ohms.
- To avoid a short circuit, do not allow stray wires to touch another terminal.
- Use only the length of wire necessary to connect the speakers to the receiver.

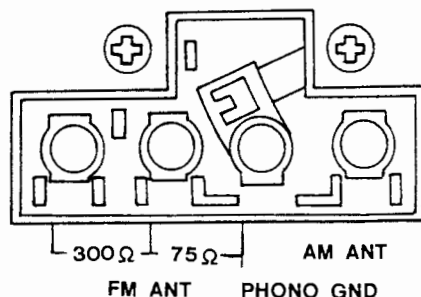
POSITIONING YOUR SPEAKERS

Placement of your speakers depends largely on the arrangement of your listening room and the way you listen to music. Experiment with different speaker locations to achieve the best sound.

Stereo speakers should be several feet apart. Putting them too close together reduces the stereo effect, while placing them too far apart reduces the bass effect and creates a "hole" in the middle. Speakers usually disperse the sound at about a 60-degree angle, so ideally, your listening position should be in the overlap area. You might want to angle the speakers toward you for a better stereo effect.

CONNECTING ANTENNAS

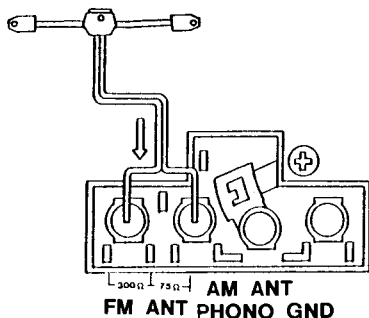
Under most conditions, your receiver's built-in antennas are adequate for FM and AM reception. Connect the FM line-cord antenna to the FM ANT 300-ohm screw terminal on the back panel of your receiver. The built-in AM antenna requires no attention.



IMPROVING FM RECEPTION

If you have trouble with the FM reception in your area, try one of the arrangements listed below.

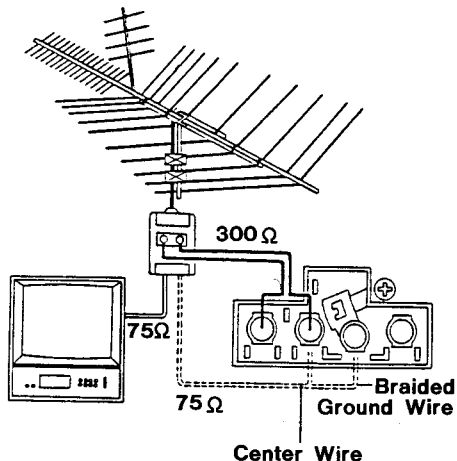
- Build the low-cost folded dipole antenna illustrated (available at your local Radio Shack store). Attach the flat cable to the 300-ohm terminals on the receiver's back panel. You can tack the antenna to the back of a record cabinet or onto a wall. Reception is usually best when you attach the antenna at the highest possible position.



- A set of VHF-TV rabbit ears or antennas made specially for FM reception work well in suburban areas. Connect these types of antennas to the 300-ohm screw terminals on the receiver's back panel.

- An outside VHF-TV antenna provides excellent FM reception. A "splitter" (available at all Radio Shack stores) permits you to connect a TV set and your receiver to the same antenna. Your local Radio Shack store also sells a full line of outside antennas to help you achieve adequate reception in fringe areas.

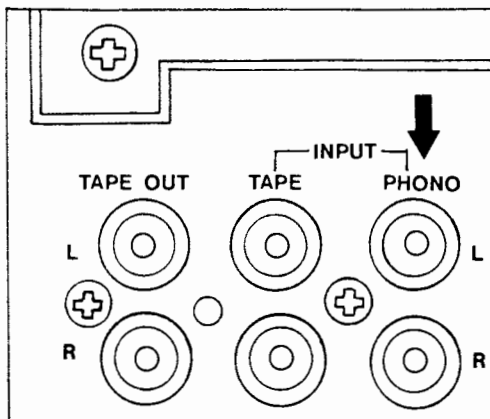
If you use a 300-ohm flat cable, connect it to the antenna's 300-ohm terminals. If you use a 75-ohm coaxial cable, connect it to the antenna's 75-ohm terminals. When you use the 75-ohm coaxial cable, attach the center wire of the cable to the common terminal between the 75-ohm and 300-ohm antenna terminals. Then, connect the braided ground wire under the clamp as shown below.



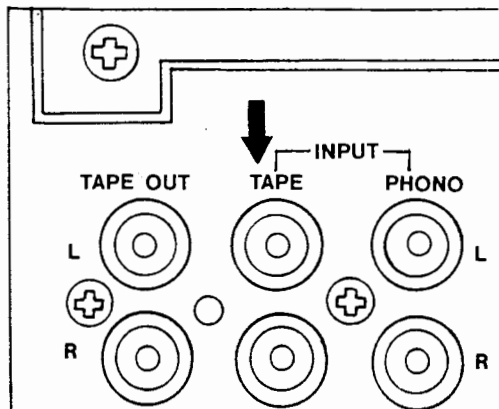
Note: To protect your receiver, use a lightning arrestor on any outdoor antenna.

CONNECTING A TURNTABLE

If your turntable has a magnetic cartridge, connect the turntable's output jacks to the receiver's PHONO INPUT jacks.



If your turntable has a ceramic or crystal cartridge, connect the turntable's output jacks to the receiver's TAPE INPUT jacks.



If the turntable has a ground wire (usually black or green), connect it to the receiver's PHONO GND screw to reduce or eliminate speaker hum.

CONNECTING A CASSETTE DECK

For playback:

Connect your cassette deck's output jacks to the receiver's TAPE INPUT jacks. If you want to connect a portable CD or cassette deck, see "Using the CD/TAPE Input Jack."

Note: If you use the front panel CD/TAPE input jack, you deactivate the back panel TAPE INPUT jacks, and only the CD/TAPE input jack works. To use the TAPE INPUT jacks, simply unplug your portable CD or cassette player from the CD/TAPE input jack.

For recording:

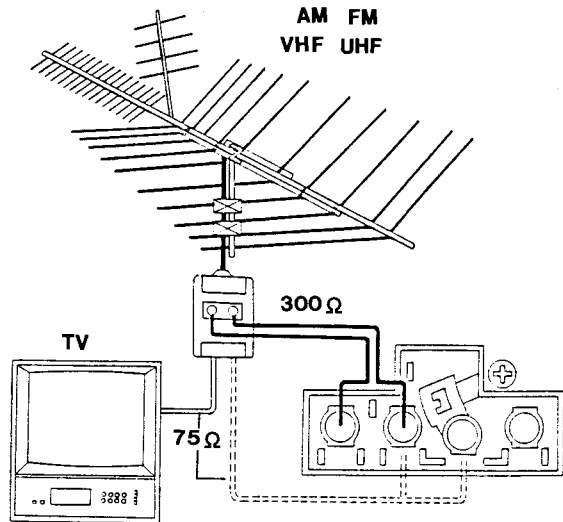
Connect your cassette deck's line-in or aux-in input jacks to your receiver's TAPE OUT jacks.

Note: The receiver's TONE, BALANCE, and VOLUME controls and [LOUDNESS] button do not affect your recording.

CONNECTING TO AC POWER

1. Check all connections, especially the speaker connections, to ensure that they are firm and that there are no stray wires.
2. Be sure the [POWER] button is in the out position.
3. Set the VOLUME control to MIN.
4. Plug the receiver's AC power cord into a standard AC outlet.

TYPICAL SYSTEM CONNECTIONS



OPERATION

USING THE RECEIVER'S CONTROLS

1. Press [POWER] to turn on the receiver. When the power is on, the red dial-pointer indicator lights. Press [POWER] again to turn off the power.
2. Select and prepare the desired program source as described in the following instructions.

Program Sources

AM — Set the source selector to AM. Use the turning control to select the preferred station. When you accurately tune to a station, the green TUNED indicator lights.

FM AUTO — Set the source selector to FM AUTO. Use the tuning control to select the preferred station. When you accurately tune in a station, the green TUNED indicator lights.

If the station is broadcasting in stereo, the red STEREO indicator also lights.

PHONO — Set the source selector to PHONO. Put a record on your turntable and adjust the front panel controls for the desired sound. See "Connecting a Turntable."

CD/TAPE — Set the source selector to CD/TAPE. This activates the receiver's CD/TAPE input jack or the TAPE INPUT jacks so that you can listen to your favorite CDs and cassettes. This is also the source you select if you have a ceramic or crystal-cartridge turntable.

3. Adjust the VOLUME control to the desired sound level. The VOLUME control adjusts the sound level for both channels, from MIN (minimum) to MAX (maximum).
4. To increase high frequencies, turn the TONE control toward HI. To decrease high frequencies, turn the TONE control toward LO.
5. When you use Radio Shack's MINIMUS series or other small speakers, set the EQ switch (on the receiver's back panel) to the ON position to boost low frequencies. Here, the EQ switch activates the special equalization circuitry in your receiver to give you the same rich, full sound as in larger speaker systems.

If you use another speaker system, experiment by setting the EQ switch to both the OFF and ON positions. Use the position that produces the best sound.

6. When listening at low volume levels, press [LOUDNESS]. This compensates for the ear's reduced sensitivity at low volume levels by boosting the low and high frequencies.
7. If necessary, adjust the BALANCE control for the best channel balance. At the center position, the receiver delivers equal sound to both speakers.

Note: To listen privately using headphones with a $\frac{1}{8}$ -inch plug, insert the plug into the front panel PHONES jack. When you connect the headphones, the external speakers are automatically muted.

Hearing Comfort and Your Health

Do not listen at extremely high volume levels, especially when using headphones. Extended, high-volume listening can lead to permanent hearing loss.

USING THE CD/TAPE INPUT JACK

The CD/TAPE input jack lets you quickly hook up a portable CD (compact disc) player or cassette deck to your receiver. You need a shielded audio cable with a $\frac{1}{8}$ -inch stereo plug on both ends to complete the connections.

1. Plug one end of the audio cable into the headphone output jack of your portable CD player or stereo cassette deck.

2. Plug the other end of the audio cable into your receiver's front panel CD/TAPE input jack.
3. Set the source selector to the CD/TAPE position.

OVERLOAD PROTECTION

Your receiver has an overload protection system. If your speaker terminals receive an unusually high power surge, this system automatically decreases the output power to a very low level to protect your receiver and speakers. If this happens, turn off the power and check all speaker connections. Be sure that there are no stray pieces of wire touching between the positive (+) and negative (—) speaker terminals. Also check that your speakers have an impedance rating of at least 8 ohms.

THERMAL PROTECTION

Your receiver also has a thermal protection system. If the receiver overheats, it automatically turns off press [POWER] to the out position, and then check to be sure the receiver's ventilation holes are unobstructed. After the receiver cools (about 15 minutes), press [POWER] in.

Caution: Using speakers with an impedance rating less than 8 ohms can cause the receiver to overheat.

CARE AND MAINTENANCE

Your receiver is an example of superior design and craftsmanship. The following suggestions will help you care for your receiver so that you can enjoy it for years.



Keep the receiver dry. If it does get wet, wipe it dry immediately. Liquids can contain minerals that can damage the electronic circuits.



Use and store the receiver only in normal temperature environments. Extreme temperatures can shorten the life of electronic devices and distort or melt plastic parts.



Handle the receiver gently and carefully. Dropping it can damage circuit boards and cases and cause the receiver to work improperly.



Keep the receiver away from dust and dirt, which can cause premature wear of parts.



Wipe the receiver with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the receiver.



Modifying or tampering with the receiver's internal components can cause a malfunction and invalidate the receiver's warranty. If your receiver is not operating as it should, take it to your local Radio Shack store for assistance.

SPECIFICATIONS

• AMPLIFIER

Audio Output Power:

5 Watts Per Channel, Minimum RMS into 8 ohms from 40-20,000 Hz, with no more than 0.9% Total Harmonic Distortion.

Signal-to-Noise Ratio:

70 dB (PHONO), 72 dB (TAPE)

Frequency Response:

40 -20,000 Hz (– 1.5 dB)

Input Sensitivity (for 5W, 8 ohms load):

PHONO 2.5 mV

TAPE 150 mV

Tape Output Level:

400 mV/50 K ohms Load

LOUDNESS Compensation:

+6 dB at 100 Hz/ +4 dB at 10 kHz

TONE Effect (at MIN position):

– 14 dB at 10 kHz

FM TUNER

Tuning Range: 88-108 MHz

Sensitivity (IHF, 3%): 7 μ V (22.1 dBp)

Signal-to-Noise Ratio: 60 dB

Stereo Separation at 1 kHz: 35 dB

AM TUNER

Tuning Range: 530-1710 kHz

Sensitivity (IHF, 10%): 450 μ V/m

Signal-to-Noise Ratio: 37 dB

RF overload: 4%

RF interference Rejection: Rated
Excellent

POWER REQUIREMENTS:

120V AC, 60 Hz, 30W. Max.

(220/240V AC, 50 Hz, 30W. Max.
for U.K. and Australian models
available only in U.K./Australia)

NOTES

RADIO SHACK LIMITED WARRANTY

This product is warranted against defects for 2 years from date of purchase from Radio Shack company-owned stores and authorized Radio Shack franchisees and dealers. Within this period, we will repair it without charge for parts and labor. Simply **bring your Radio Shack sales slip** as proof of purchase date to any Radio Shack store. Warranty does not cover transportation costs. Nor does it cover a product subjected to misuse or accidental damage.

EXCEPT AS PROVIDED HEREIN, RADIO SHACK MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

We Service What We Sell

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A Division of Tandy Corporation
Fort Worth, Texas 76102